

VERSION OF AMENDMENTS WITH MARKINGS TO SHOW CHANGES**IN THE CLAIMS:**

The claims have been amended as follows:

1. (amended) An apparatus for inspecting a reflective EUV mask blank for defects, comprising:

an EUV light source; and

means for simultaneously imaging multiple points in an area of a mask blank [using] in response to reflections of light from said EUV light source impinging on said mask blank.

7. (amended) An apparatus for inspecting a reflective EUV mask blank for defects, comprising:

means for directing EUV light to a mask blank; and

means for simultaneously imaging multiple points of an area of a mask blank [using] in response to reflections of EUV light impinging on said mask blank.

13. (amended) An apparatus for inspecting a reflective EUV mask blank for defects, comprising:

an EUV light source configured to direct a beam of light toward a mask blank;

and

an EUV detector configured to simultaneously image multiple points of an area of said mask blank [using]in response to light from said EUV light source reflected from

23. (amended) A method for inspecting a reflective EUV mask blank for defects, comprising simultaneously imaging multiple points of an area of a mask blank [using] in response to reflections of light from an EUV light source impinging on said mask blank.

29. (amended) A method for inspecting a reflective EUV mask blank for defects, comprising:

directing a beam of light from an EUV light source toward a mask blank; and
simultaneously imaging multiple points of an area of said mask blank [using]in response to light from said EUV light source reflected from said area of said mask blank to be imaged.

REMARKS

Reconsideration of this application is respectfully requested in view of the foregoing amendments and discussion presented herein.

1. Rejection of Claims 1-34 under 35 U.S.C. § 102(e).

Claims 1-34 were rejected under 35 U.S.C. § 102(e) as being anticipated by Cohen et al. (U.S. No. 6,142,641). Applicant has carefully considered the rejection and responds as follows.

(a) Claims 1 and 23. Claims 1 and 23 are independent claims drawn to an apparatus for "inspecting a reflective EUV mask blank for defects", which has been rejected based on the teaching of Cohen et al. which describes a "Four-Mirror Extreme Ultraviolet (EUV) Lithography Projection System" (Title) to "transfer a pattern on a reticle 6 to a wafer substrate 7" (col. 3, lines 55-56). In response, the Applicant respectfully submits that the cited reference has been misapplied to Applicant's invention, and that Cohen et al. does not anticipate Claims 1 and 23 (or the claims that depend therefrom).

It should be readily apparent by comparing Applicant's FIG. 1 through FIG. 4 with Fig. 1 of Cohen et al. that the cited reference does not show reflections extending from substrate 7 on stage 15. Nor does Cohen et al. teach any device for registering these reflections. The only use of optical detectors in Cohen et al. is for performing alignment of the mirrors shown in Fig. 4A, 4B, 5A, 5B, 6A, 6b, 7, 8, 9. These are not positioned for, configured for, or capable of detecting reflections from the surface of the mask

detecting defects on the surface

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This is not surprising as the system described by Cohen et al. is for transferring an image to a substrate, and not for "inspecting a reflective EUV mask blank for defects" as described in Applicant's invention. In fact, the term "defect" is not even found in the teachings of Cohen et al.; nor are any other descriptions contained therein referring to inspecting a wafer for defects.

With regard to Claim 1, since Cohen et al. DOES NOT in any way describe a "means for simultaneously imaging multiple points in an area of a mask blank using reflections of light from said EUV light source impinging on said mask blank", it cannot anticipate Applicant's invention as recited in Claim 1.

With regard to Claim 23, since Cohen et al. does not describe either "imaging multiple points of an area of a mask blank" or "reflections of light from an EUV light source impinging on said mask blank", it clearly does not anticipate Applicant's invention as recited in Claim 23.

As can be seen, therefore, Claims 1 and 23 recite one or more elements which are not found in the reference cited by the Examiner. Accordingly, the Applicant respectfully submits that Claims 1 and 23, as well as the claims which depend therefrom, are not anticipated by Cohen et al.

(b) Claim 7. Claim 7 is an independent claim which has been rejected under similar grounds as recited above in relation to Claims 1 and 23. In support of the rejection, the Examiner indicates that Cohen et al. describes "means for simultaneously imaging multiple points of a mask blank using reflections/mirrors 2, 3, 4, and 5 (col. 4,

been misapplied to Applicant's invention because Cohen et al. does not describe the

imaging of reflections from the mask blank and NO elements are described for capturing light being reflected from a mask upon which EUV light, or any light, is impinged.

Because Cohen et al. does not describe every element of Applicant's Claim 7, it can not anticipate Applicant's invention under 35 U.S.C. § 102(e). Accordingly, the Applicant respectfully requests that the rejection of Claim 7, and the claims which depend therefrom, be withdrawn.

(c) Claims 13 and 29. Claims 13 and 29 are independent claims which have been rejected based on a misinterpretation of the teachings found in Cohen et al.; namely, the Applicant respectfully submits that the Examiner incorrectly states that Cohen et al. provides for "simultaneously image multiple points of an area using light from the EUV light source 8 (col. 4, lines 1+) reflected from the area of the mask to be imaged (col. 4, lines 60-67, and col. 5, lines 35-54)".

Cohen et al. teaches a means for transferring an image to a substrate, wherein NO reflections from a wafer are described or shown in the applications, and NO imaging device for capturing those reflections are recited. The sections relied upon by Examiner (col. 4, lines 60-67, and col. 5, lines 35-54), describe the use of mirrors for transferring a pattern from a reticle to a substrate. Nowhere does Cohen et al. teach imaging reflections off of a EUV reflective mask blank. Therefore, the Applicant respectfully submits that Cohen et al. has been misapplied.

Further, note that Claim 13 recites "an EUV detector" which, as described above,

multiple points of an area of said mask blank in response to light from said

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source reflected from said area of said mask blank to be imaged" which Cohen et al. clearly does not teach as also described above. Therefore, the rejection of Claim 29 and the claims that depend therefrom must be withdrawn.

Therefore, since Claims 13 and 29 contain elements not found in the cited reference are clearly not anticipated by any teachings within cited reference of Cohen et al. '641, Applicant respectfully submits that the rejection must be withdrawn.

(d) Claim 18. Claim 18 is an independent claim which has been rejected based on a misinterpretation of the teachings found in Cohen et al. '641.

The teachings relied upon by the Examiner (col. 14, lines 47-67+) describes scanning of the pattern from one position on the substrate to another. A reflective reticle 6, the reflected EUV light from which is directed by mirrors onto the surface of substrate 7. The light striking substrate 7 is a pattern for exposing the portions of the surface of the substrate within a photolithography process. No reflections are described which leave the substrate for registration by a detector that determines defects on the mask blank. Cohen et al. '641 simply DOES NOT TEACH detecting reflections of EUV light from a mask blank for determining the presence of defects, as recited in Applicant's Claim 18, wherein it includes "an EUV detector positioned to simultaneously record the reflection from a multiple points of an area of the mask blank in a single exposure to said EUV light source".

Aspects of the Claim 18 are not found in the art relied upon, wherein the claim is not anticipated, and the rejection should be withdrawn, along with rejections of any

claims that should be considered *a fortiori* allowable

(e) Claims 2-6, 8-12, 14-17, 19-22, 24-28, 30-34, and 36-39. These dependent claims have been similarly rejected based on a misinterpretation of the Cohen et al. reference. Because these claims depend from claim which have been shown as not being anticipated by Cohen et al., they should be considered *a fortiori* allowable.

Therefore, the Applicant respectfully submits that Claims 1, 7, 13, 18, 23, and 29, as well as the claims which depend therefrom, recite one or more elements not found in Cohen et al. and are not anticipated by that reference. Accordingly, the Applicant respectfully requests that the rejection of Claims 1-39 be withdrawn.

2. Rejection of Claims 5, 6, 11, 12, 16, 17, 21, 27, 28, 33, 34, 36-39 under 35 U.S.C. § 103(a).

Claims 5, 6, 11, 12, 16, 17, 21, 27, 28, 33, 34, and 36-39 were rejected as being obvious in view of various combinations of Khursheed et al. (U.S. 6,057,553), Washizuka (U.S. 5,541,416), Pierrat (U.S. 6,023,328) and Cohen et al.

The Applicant respectfully submits that subject matter of independent Claims 1, 7, 13, 18, 23, 29, or 35 (as well as the above-identified dependent claims) would not have been obvious to a person having ordinary skill in the art in view of the teachings of Cohen et al., Khursheed et al., Washizuka, or Pierrat '328, or any combination thereof. None of these references suggests, teaches or provides motivation or incentive for the detection of defects in an EUV mask blank.

It is not apparent to the Applicant how these references could be combined to

drawn from art that does not closely relate to the subject matter of the claims.

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readily appreciated from even a cursory examination of these references.

Khursheed et al. '553 describes a "portable high resolution scanning electron microscope column using permanent magnet electron lenses", see title. The invention provides for generation of magnetic fields within a portable column for deflecting electron beams traveling through the column (see abstract, and summary of invention at col. 1, line 64 through col. 2, line 19).

Washizuka '416 describes an "estimation method and apparatus for semiconductor light emitting element capable of inspecting by wafer", see title. The invention provides for directing "pulsed laser light" against "the light emitting layer of a light emitting element" from which a "life time is obtained by detecting the fluorescent light emitted from the specified position...".

Pierrat '328 describes a system for comparing stepped images created under magnification through a completed photomask. A substrate is exposed by the photomask at 5-10 times magnification, wherein the pattern in the resulting substrate may be checked to assure that each step of the photomask has an identical image without any defects. (See "Summary of Invention" at col. 2, lines 56 - 67, and col. 3, lines 1 - 44).

Cohen et al. '641 lacks a means of detecting reflections from a blank mask upon which EUV light has been impinged, and is directed at different goals than Applicant's invention. In similar manner to Cohen et al., none of these additional references describes reflecting EUV light from a reflective EUV mask blank into a detector to

men et al. '641 with any of the above references still would not disclose these

deficiencies. Additionally, as these references utilize different operating principles and are all directed toward different purposes than Applicant's invention, there would be no suggestion or motivation in the references for even pursuing such a combination.

Therefore, it appears that a number of shortcomings would arise from any combination of the cited references utilized for supporting an obviousness rejection for the purposes of 35 U.S.C. § 103 of Applicant's claims. In view of the cited references Applicant respectfully submits that since all claims of the invention are neither anticipated, nor obvious, that all claims should be immediately passed to allowance.

4. Amendment of Claims 1, 7, 13, 23 and 29.

The Applicant has amended these independent claims to improve clarity by replacing the term "using" with "in response to". None of the amendments have been made for the purpose of overcoming any ground for rejection or addressing any cited reference. Nor do any of the amendments narrow the scope of the claims.

5. Means Plus Function Format of Claims 1 and 7.

The Applicant respectfully traverses the rejection of Claims 1 and 7 based on *In re Donaldson*, 16 F.3d 1189, 1193 (Fed. Cir. 1994)(en banc). Because Claims 1 and 7 are written in means plus function form pursuant to 35 U.S.C. §112, sixth paragraph, they must be interpreted during examination under *In re Donaldson*.

In rejecting Claims 1 and 7, as well as the claims that depend therefrom, the Examiner made no specific fact findings as to the scope of equivalents for the means plus function elements in the claims. Instead, the Examiner appears to have followed

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If the examiner finds that a prior art element performs the function specified in the claim, and is not excluded by any explicit definition provided in the specification for an equivalent, the examiner should infer from that finding that the prior art element is an equivalent, and should then conclude that the claimed limitation is anticipated by the prior art element. The burden then shifts to applicant to show that the element shown in the prior art is not an equivalent of the structure ... disclosed in the application. *In re Mulder*, 716 F.2d 1542, 219 U.S.P.Q. 189 (Fed. Cir. 1983). No further analysis of equivalents is required of the examiner until applicant disagrees with the examiner's conclusion, and provides reasons why the prior art element should not be considered an equivalent.

While the Examiner appears to have followed the provisions of MPEP §2183, such provisions are contrary to Federal Circuit law. The Federal Circuit has held that an examiner "construing means-plus-function language in a claim must look to the specification and interpret that language in light of the corresponding structure ... described therein, and equivalents thereof," *In re Donaldson*, 16 F.3d 1189, 1193 (Fed. Cir. 1994)(en banc), and in so ruling expressly denied that "the PTO is exempt from this mandate." *Id.* The Federal Circuit added that it was specifically overruling any precedent that suggested or held to the contrary. *Id.* at 1193-94. In response to the PTO's argument that the court's ruling conflicted with the principle that a claim should be given its broadest reasonable interpretation during prosecution, the Federal Circuit held that the Donaldson decision was setting "a limit on how broadly the PTO may construe means-plus-function language under the rubric of 'reasonable interpretation.'" *Id.* at 1194. In other words, an examiner's claim interpretation is not "reasonable" if it is not based on the specification's description of the implementation of the means element of the claim. The court then said, "Accordingly, the PTO may not disregard the

language when rendering a patentability determination.

Here, as in *Donaldson*, the Examiner is required by statute to look to the Applicant's specification and construe the "means" language as referring to corresponding means disclosed in the specification and equivalents thereof." See *id.* at 1195. However, the Examiner did not construe the means language of these claims, however. Nor did the Examiner find, on the basis of specific facts of record here, that the means disclosed in the Applicant's specification were equivalent to that of the cited references. Instead, as prescribed by MPEP §§ 2183-84, the Examiner simply presumed equivalence. The presumption methodology used here, which the MPEP prescribes, clearly conflicts with the requirements of the Federal Circuit's *Donaldson* decision. The approach taken by the Examiner in this case also conflicts with *In re Bond*, 931 F.2d 831 (Fed. Cir. 1990).

The very point of these cases is that, in this context, limitations from the specification control the interpretation of the claim. Under §112, paragraph 6, a means-plus-function element of a claim must be construed to mean that which is disclosed in the specification and its equivalents. In *Donaldson*, the Federal Circuit said that "our holding does not conflict with the general claim construction principle that limitations found only in the specification of a patent or patent application should not be imported or read into a claim." In other words, the court was saying that a §112, paragraph 6 "means" element does not need to be "imported or read into" a means-plus-function claim because the specification's limitations and their equivalents are already in the claim by virtue of §112, paragraph 6's command. Thus, the Federal

of a limitation already in the claim in the form of a means-plus-function clause and a statutory mandate on how that clause must be construed."

Based on the foregoing, the Applicant respectfully submits that the rejection of Claims 1 and 7, as well as the claims that depend therefrom lacks proper foundation and that the rejection should be withdrawn. Those claims, each of which include means plus function limitations, should have been interpreted in view of the specification as required by *In re Donaldson*. If those claims has been so interpreted, the Applicant respectfully submits that they would have been found allowable.

6. Conclusion.

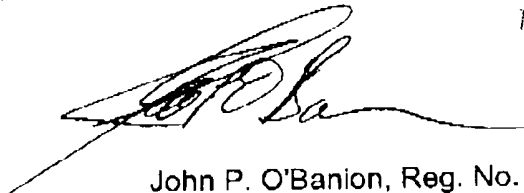
In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

The Applicant also respectfully requests a telephone interview with the Examiner in the event that there are questions regarding this response, or if the next action on the merits is not an allowance of all pending claims.

Date:

12/18/2002

Respectfully submitted,



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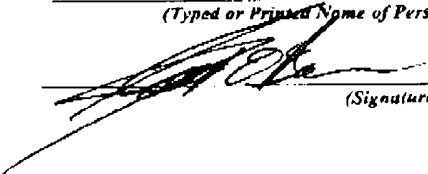
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CERTIFICATE OF TRANSMISSION BY FACSIMILE (37 CFR 1.8) Applicant(s): GOLDBERG, K.		Docket No. LBL-CTB-1572	
Serial No. 09/902,502	Filing Date JULY 9, 2001	Examiner LABAZE, E.	Group Art Unit 2876
Invention: METHOD AND APPARATUS FOR INSPECTING AN EUV MASK BLANK			

I hereby certify that this AMENDMENT (PAGES 1-15)
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